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	First Named Inventor	Raoux, Sebastien	
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	Examiner Name	Rudy Zervigon	
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT		
Firm or Individual name	Townsend and Townsend and Crew LLP Chun-Pok Leung Reg. No. 41,405	
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Date	June 21, 2004	
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ORIGINAL

PATENT
Attorney Docket No.: 1771X2T19930
TTC No.: 16301-019930

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of:

SEBASTIEN RAOUX et al.

Application No.: 09/988,246

Filed: December 1, 1997

For: METHOD AND APPARATUS
FOR MONITORING AND
ADJUSTING CHAMBER
IMPEDANCE

Examiner: Rudy Zervigon

Art Unit: 1763

**APPELLANT'S REPLY BRIEF UNDER
37 CFR § 1.193(b)(1)**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Examiner's Answer mailed on April 21, 2004 to the Appeal Brief filed on February 2, 2004, Applicants respectfully request the Board of Patent Appeals and Interferences to consider the following remarks. This reply brief is filed in triplicate, and is believed to be proper pursuant to 37 CFR § 1.193(b)(1).

ARGUMENTS:

1. On Page 2, the Examiner states: "The statement of the status of the claims contained in the brief is incorrect." Applicants have reviewed the statement of the status of the claims contained in Appellant's Brief and found no errors.
2. On Page 5, the Examiner states: "Applicant states (last line page 8), that the Examiner 'concedes that Patrick et al does not teach the first and second impedance probes'. In no way has the Examiner ever conceded

Applicant's assertion." Yet, the Examiner has continued to fail to point out where in Patrick et al. the first and second impedance probes are taught.

3. On pages 5-6, the Examiner states: "Applicant further states 'The power sensor in Patrick et al., however, does not measure the impedance at the LF electrode or at the HF electrode.'" (last line, page 8) And 'The Examiner, however, fails to recognize that Patrick et al does not disclose even one impedance probes [sic] for measuring the impedance at an electrode. The Examiner has not identified any impedance probe in Patrick et al.'" (second paragraph, last two lines, page 10), yet, the Examiner has maintained the clear demonstration in Patrick et al to the contrary. In particular, Patrick measures the impedance (column 3, lines 64-67) at the Patrick's electrode (112)." Although Patrick states that "impedance of the plasma chamber electrode may also be measured," it fails to disclose even one impedance probe for measuring the impedance at an electrode, not to mention a first impedance probe to measure the impedance at the HF electrode and a second impedance probe to measure the impedance at the LF electrode.

4. On page 7, the Examiner states: "In summary, Applicant's position that Patrick does not teach plural impedance probes is agreed by the Examiner. However, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04). Added process control from providing plural impedance monitors would naturally result and would be obvious to one of ordinary skill as taught by Patrick (column 5, line 57 - column 6, line 34)." The Examiner's conclusion, however, ignores the fact that Patrick et al. does not disclose any impedance probe and that the two impedance probes (one for the HF electrode and the other for the LF electrode) are novel and produce new and unobvious results, as discussed at pages 9-10 of Appellant's Brief.

5. On pages 7-8, the Examiner states: "In response to applicant's arguments that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., 'phase angle, and current intensities to analyze the effects of ion bombardment') are not recited in the rejected claims." The Examiner misses the point of Applicants' argument, which is that measuring the impedance separately at the HF electrode and at the LF electrode can provide important information regarding the system and the process, and produce new and unobvious results, as discussed at page 19 of Appellant's Brief.
6. On page 8, the Examiner states: "In response to applicant's argument (page 12, 'Claim group 2') that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper." The Examiner's hindsight reasoning is improper because he ignores the fact that the variable capacitors 106, 108 in Patrick et al. are not coupled to an LF electrode and nothing in the cited art suggests coupling a variable capacitor to the LF electrode.
7. On page 9, the Examiner states: "Motivation for Patrick to add a variable capacitor separate from the matching network of a plasma processing chamber as taught by Yamagata is discussed by Yamagata as drawn to controlling the amount of power applied to each of the electrodes in the plasma reactor (column 1, lines 45-47)." The Examiner's allegation ignores the fact that nothing in Yamagata et al. discloses or suggests a variable capacitor electrically coupled to the chamber and controllably coupled to the processor wherein the processor adjusts a capacitance level

of the variable capacitor to vary the impedance of the plasma in response to an output of the impedance monitor, as recited in claim 16.

8. On page 9, the Examiner states: "Applicant states (page 14) that claims 13, 14, and 19 are allowable because none of the cited prior art teach 'an impedance tuner is coupled in series to the substrate holder' yet, it was established that Patrick et al teaches variable capacitors and tuners (items 106 and 108; Figure 2A; Page 28, line 6 of Applicant's Specification) that impart a desired impedance to Patrick's electrode" The Examiner, however, ignores the fact that Patrick et al. does not disclose an impedance tuner coupled in series to the substrate holder which comprises the LF electrode.
9. On pages 9-10, the Examiner states: "Applicant states (page 15), with respect to claim 28, that none of the references teach a processor to 'adjust at least one of the high frequency RF power level of the power source.'. To the contrary, it has been established that Patrick et al clearly teaches said processor (204; Figure 2A) to 'control the amount of power from the RF generator 102.' (column 7, lines 13-20). Applicant further states that Arami does not teach capacitors in his matching circuits (32, 33; Figure 1). The Examiner agrees as in the Final Action, however, matching networks are well known in the art as having capacitors as demonstrated by Patrick et al (see variable capacitors 106, 108 of matching network 120, Figure 2A). Thus Arami's inherent capacitors, as demonstrated by Patrick's matching network capacitors (106, 108; Figure 2A), are applicant's claimed 'matching network capacitors'. Further, the Examiner stated that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the Patrick impedance monitor coupled to each of the low and high frequency electrodes of Arami et al. Thus, the addition and replication of Patrick's impedance monitor would meet applicant's claim limitation of Applicant's 'the matching network' (of

Arami) 'has capacitors that are different' 'than the variable capacitor' (of Patrick)." The Examiner, however, continues to ignore the fact that the references fail to disclose or suggest a processor configured to adjust at least one of a high frequency RF power level of the power source and a low frequency RF power level of the power source, based on measurements by the first impedance probe and the second impedance probe, as recited in claim 28.

10. On page 10, the Examiner states: "In response to applicant's argument that the capacitors of the matching network and the variable capacitors are 'different', a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art." This is not a case of intended use. Rather, the Examiner alleges that Patrick et al. discloses variable capacitors 106, 108. The relevant claims recite a variable capacitor electrically coupled to the chamber and controllably coupled to the processor which adjusts a capacitance level of the variable capacitor to vary the impedance of the plasma in response to the output of the impedance monitor, and capacitors of the matching network which are different from the variable capacitor. Patrick et al. does not disclose the variable capacitor and the capacitors of the matching network.

11. On page 10, the Examiner states: "Applicant states that the Examiner's statement of 'Neither Arami nor Patrick teach a variable capacitor separate from the matching network.' Is [sic] in the context of the rejection of claim 16. However, the Final Office action clearly cites the Examiner's statement in the context of the claim 23 rejection (Pages are misnumbered in the action)." The Examiner is not at liberty, however, to allege that the cited references teach one thing in the context of one rejection and that the cited references do not teach that same thing in the context of another

rejection. If the Examiner believes neither Arami et al. nor Patrick et al. teach a variable capacitor separate from the matching network, he must be consistent in his characterization of the cited references, even if it means withdrawing certain rejections.

CONCLUSION:

In view of the foregoing, Applicants respectfully submit that the claims are in condition for allowance, and respectfully request that the rejection of these claims be reversed.

Respectfully submitted,



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